Tiger Technology

Tiger Bridge Tape Management 1.0 User's Guide

March 7, 2019

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1 Getting Started with Tiger Bridge Tape Management

Tiger Technology's Tape Management is designed to work in conjunction with Tiger Bridge in order to facilitate you in performing the following task:

- prepare your tape libraries for work with Tiger Bridge.
- manage and monitor tapes and drives in your libraries.
- explore, manage and download data stored by Tiger Bridge on your tape libraries.

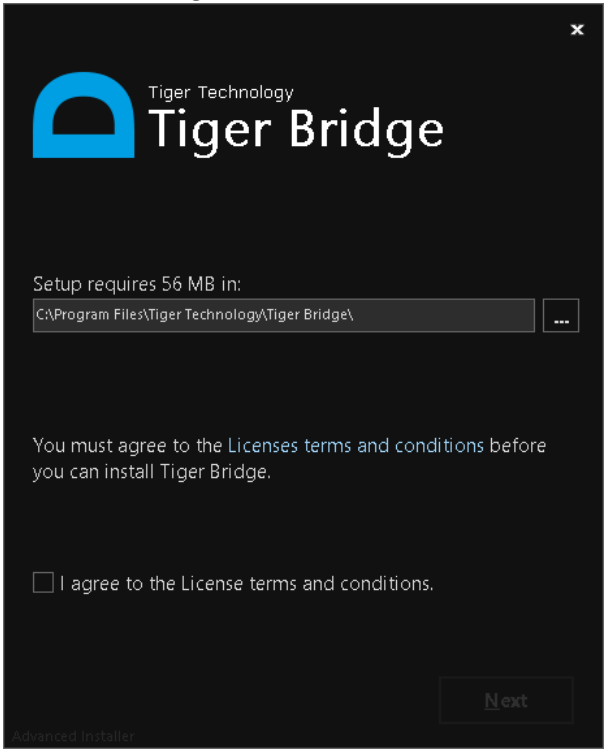
Once you install Tape Management on the Tiger Bridge server, it immediately detects all tape libraries connected to the computer and allows you to select which tape should be mounted in a selected tape driver, decommission aging tapes, prepare tapes used by Tiger Bridge for use by other systems, download any file replicated on the tape library or re-link a nearline/offline file on your source to another version of the same file on the tape.

Install Tiger Bridge Tape Management

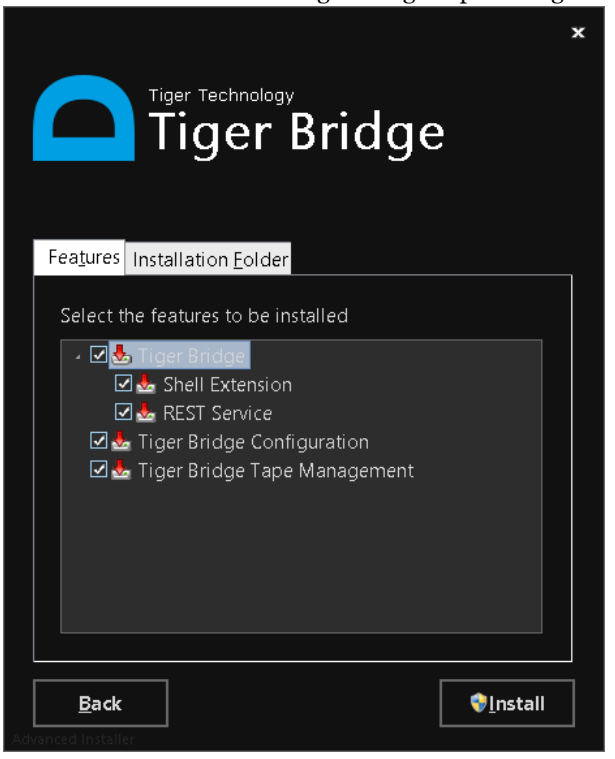
The computer on which you install Tape Management must meet the requirements for Tiger Bridge installation and have Tiger Bridge installed. You can install the Tape Management application during the installation of Tiger Bridge or later, following the steps below.

To install Tiger Bridge Tape Management:

1. Double-click the Tiger Bridge installation file and then click Next.
2. Select the folder where to install the Tape Management application, accept the terms of the software license agreement and click Next.



3. Make sure the check box of Tiger Bridge Tape Management is selected and then click Install.



Note: *You can clear the check box of the other components, if they are already installed.*

4. When the installation finishes, click Finish.
5. Restart the computer, when prompted.

Uninstall Tiger Bridge Tape Management

Important: *If you intend to access the contents of the tapes outside Tiger Bridge, before uninstalling Tape Management, make sure to prepare each tape for use by other applications. For more information, refer to "Finalize a Tape" on page 21.*

To uninstall Tape Management:

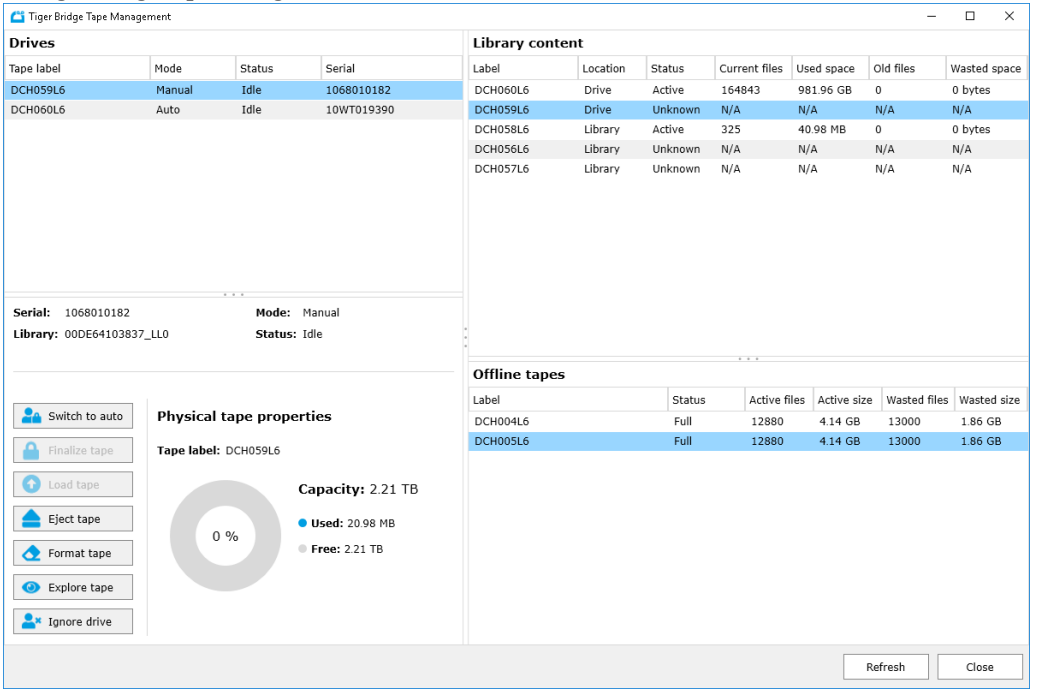
1. In Control Panel, go to Programs and Features.
2. Right-click Tiger Bridge Tape Management and select Uninstall.
3. When prompted to confirm that you want to remove Tape Management from the computer, click Yes.

Start the Tape Management Application

To start the Tape Management application:

Do one of the following:

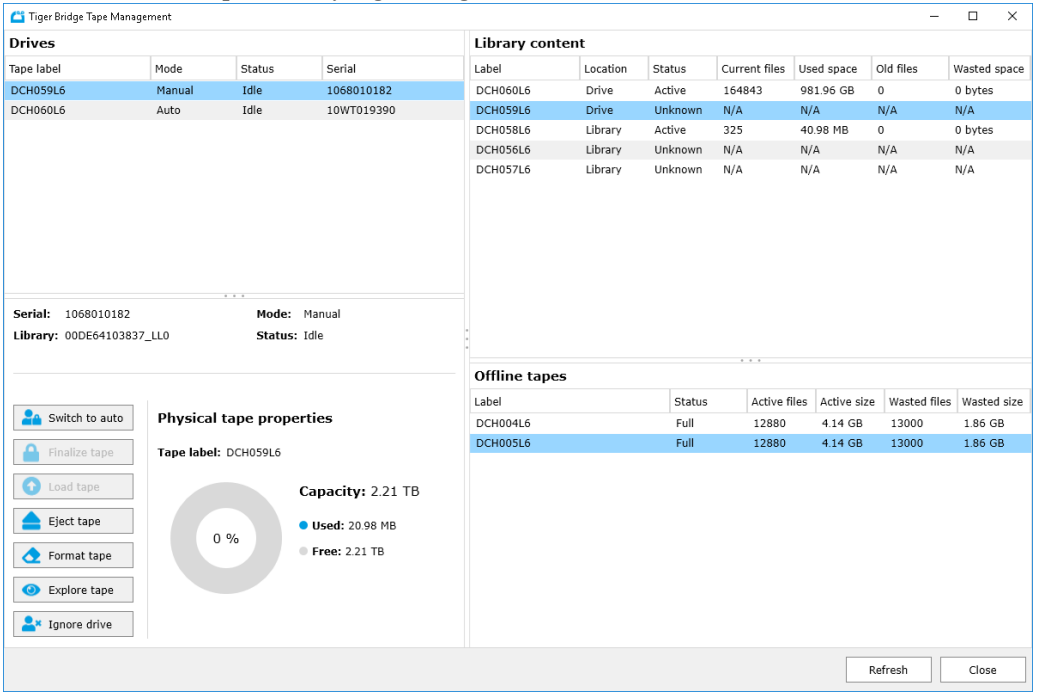
- Double-click the Tiger Bridge Tape Management shortcut on the desktop.
- Navigate to the installation folder of the Tiger Bridge Tape Management and double-click TigerBridgeTapeManagement.exe



2 Tape Libraries Management

Monitor Tape Libraries

Tiger Bridge Tape Management automatically detects all tape libraries connected to the computer. Once you start the Tape Management application, it lists all drives and all tapes currently in the libraries as well as tapes used by Tiger Bridge, but removed from the libraries.



Note: *To make sure the information displayed in the Tape Management window is up to date, click the Refresh button at the bottom right.*

The upper left pane lists all tape drives with their serial number and the label of the currently loaded tape. You can also view the following information in the pane:

- drive mode:

auto — the drive is accessible to Tiger Bridge and you cannot manage it in the Tape Management application.

manual — the drive is inaccessible to Tiger Bridge and you can manage it in the Tape Management application. Tape Management automatically switches the drive mode from manual to auto, if no activity is detected on the drive for a timeout of 24 hours, thus letting Tiger Bridge use it.

Important: *The drive mode automatically switches from manual to auto when you close the Tape Management application window.*

ignored — the drive is inaccessible to Tiger Bridge and you can manage it in the Tape Management application. Unlike manual mode, Tape Management does not automatically switch to auto mode after no operation is detected for the timeout of 24 hours. You can exit ignored mode and make the drive accessible to Tiger Bridge only manually.

error — there is an error on the drive (the drive head needs cleaning, for example). Check your tape library management software for more information and further actions.

- drive status:

idle — the drive is not currently reading or writing to any tape i.e. you can manage it in the Tape Management application after you switch to manual mode.

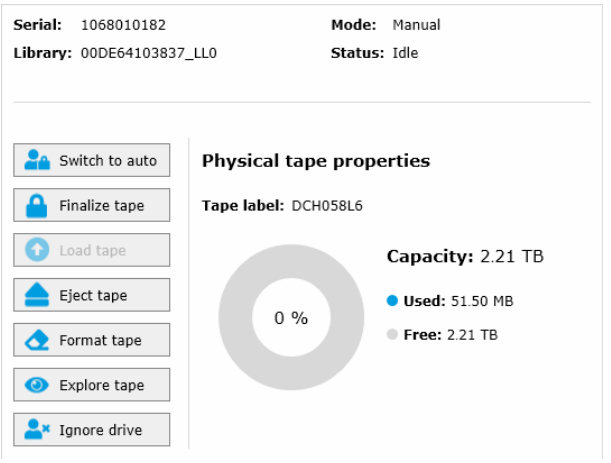
reading — currently, the drive is reading from the tape loaded into it - if the drive is operating in auto mode, Tiger Bridge is attempting to retrieve a file from the tape to the source; if the drive is operating in manual mode, a file is being downloaded through Tape Management's Drive Browser.

writing — currently, the drive is writing to the tape loaded into it - if the drive is operating in auto mode, Tiger Bridge is replicating a file from the source.

seeking — the drive is rewinding the currently loaded tape to the position where the drive's head should start reading a file.

You can sort the columns of the tape drives list in ascending/descending order by clicking their headers. Additionally, after selecting a drive in the list, the field below the pane shows you the library the drive belongs to and the lower left pane displays the capacity of the tape currently loaded

into the drive and the used and free space on it, as well as the available controls for managing the drive/the tape.



The upper right pane lists all tapes inside the tape library with their label, location (loaded into the drive or not), number and total size of the active files on the tape (files replicated by Tiger Bridge and linked to from the source), as well as the number and total size of the inactive files on the tape (older versions of files replicated by Tiger Bridge, which are currently not linked to any file on the source).

Note: *The total size of active and inactive files equals the sum of the actual sizes of each file written on the tape and may differ from the free space displayed as some of the files may have been compressed before writing them on the tape.*

The pane also show you the tape status:

active — the tape can be used by Tiger Bridge. To make a tape with active status available for use by other applications, you must finalize it, following the steps in “Finalize a Tape” on page 21.

unknown — the tape cannot be used by Tiger Bridge as it is either nor formatted, or its format is not recognized by Tiger Bridge. To make each tape in the library usable by Tiger Bridge, you must format it, following the steps in “Format Tapes” on page 19.

full — either the tape has no more free space or it has been finalized in Tape Management in order to make data on it accessible to other applications. Once a tape is finalized in Tape Management, it becomes read-only and you cannot write any more data on it. For more details, refer to “Finalize a Tape” on page 21.

The lower right pane lists all tapes that have been used by Tiger Bridge, but are physically removed from the library.

Manage Drives and Tapes

Manage Drives

In Tape Management, you can manage a tape drive by switching its mode to one of the following:

• manual - needed in order to perform maintenance operation on the drive (in case it is in error mode) or to prevent Tiger Bridge from accessing the currently loaded tape, while you manage it or explore its contents. Tape Management automatically switches the drive mode from manual to automatic, if no activity is detected on the drive for a timeout of 24 hours, thus letting Tiger Bridge use it or when you close the Tape Management application window.

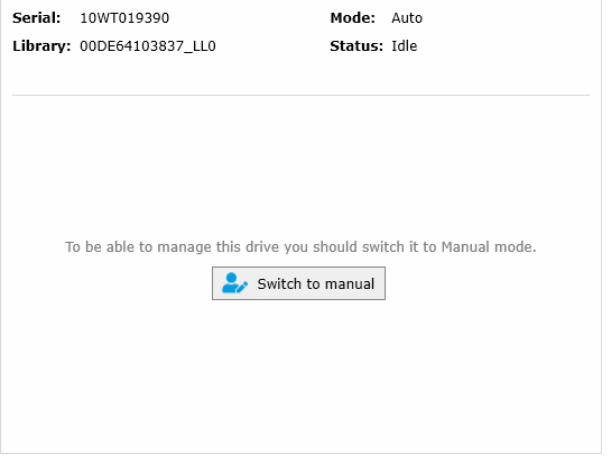
• ignored - set the drive to ignored mode, in order to prevent Tiger Bridge from using it until you manually switch its mode back to auto. For example, you can use ignored mode for a drive when you intend to perform a series of maintenance operations on it and you want to ensure that it will not switch to auto mode automatically.

• auto - use it to grant Tiger Bridge access to the tape loaded in the drive. Tape Management automatically switches the drive mode from manual to automatic, if no activity is detected on the drive for a timeout of 24 hours, thus letting Tiger Bridge use it or when you close the Tape Management application window.

To switch the mode of a drive to manual:

Important: *While switching to manual mode does not interrupt any file operation going on at the moment (like replicating or retrieving a file from the target), it will cancel any other file operations scheduled by Tiger Bridge. That is why it is advisable to switch to manual mode only when the drive is with idle status.*

1. In upper left pane of the Tape Management window, select a drive in auto or ignored mode.
2. In the lower left pane, click Switch to manual.

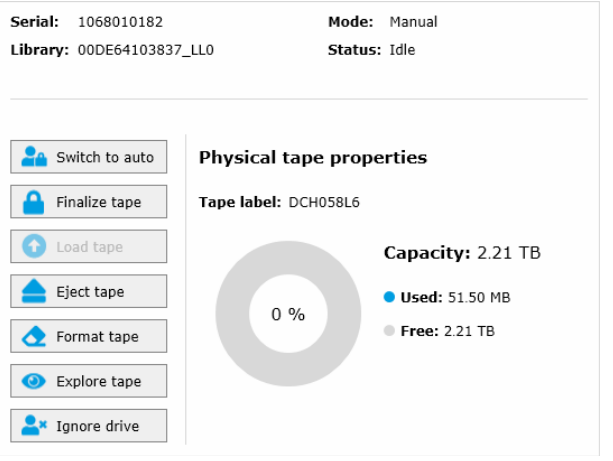


Tip: *If there is a Tiger Bridge file operation going on at the moment, the Tape Management application retries to switch to manual mode until the file operation is finished. You can click Cancel to stop Tape Management from attempting to switch to manual mode.*

Note: *Tape Management will automatically switch the drive mode back to auto, if it does not detect any activity on the drive for a timeout of 24 hours or if you close the Tape Management application window.*

To switch the mode of a drive to ignored:

1. In upper left pane of the Tape Management window, select a drive in manual mode.
2. In the lower left pane, click Ignore drive.

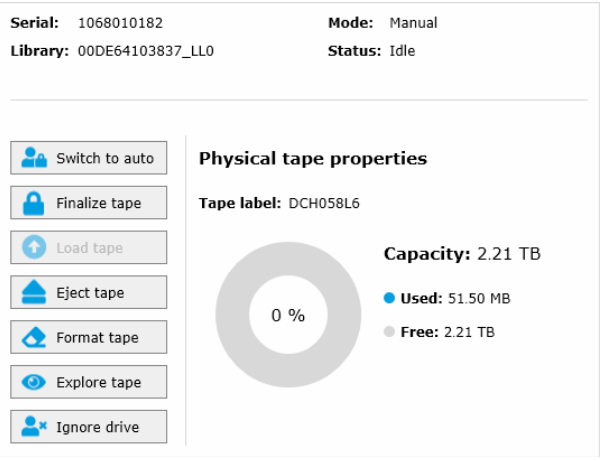


Note: *To make the drive accessible to Tiger Bridge again, you need to switch its mode to manual and after that switch it to auto.*

To switch the mode of a drive to auto:

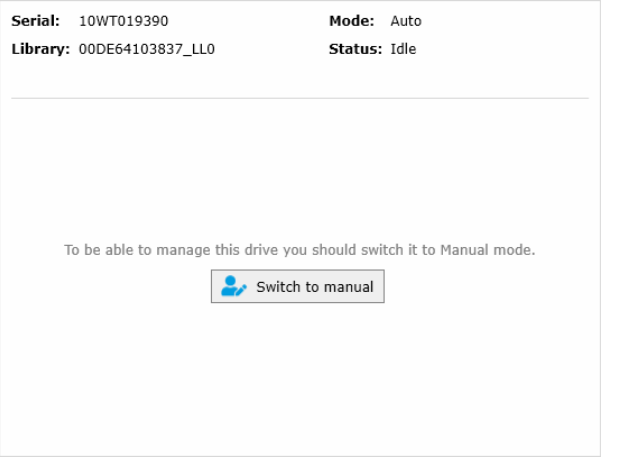
Important: *Switching the mode of a drive to auto, while you are performing a maintenance operation on it, will automatically cancel the maintenance operation.*

1. In upper left pane of the Tape Management window, select a drive in manual mode.
2. In the lower left pane, click Switch to auto.



To perform a maintenance operation on a drive:

1. In upper left pane of the Tape Management window, select a drive in error mode.
2. In the lower left pane, click Switch to manual.



3. Check your tape library software for details about the drive error.

   Tip: *If the drive's head needs cleaning, eject the currently loaded tape, by clicking Eject tape in the lower left pane. Then in the upper right pane, select a cleaning tape in the same library and in the lower left pane, click Load tape.*

4. Once you finish with the drive maintenance operation, switch the drive mode back to automatic to let Tiger Bridge use it again.

Manage Tapes

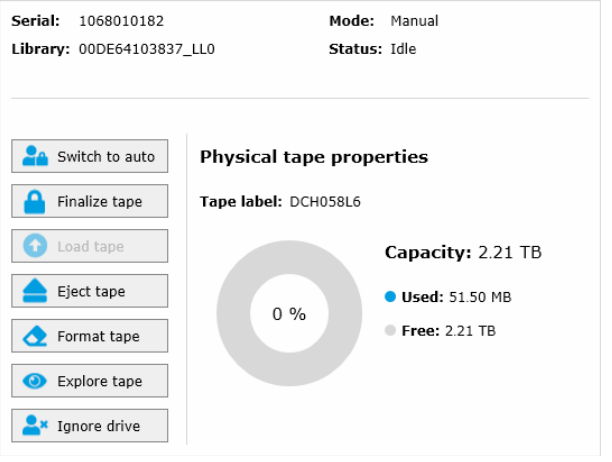
Using Tape Management, you can manage tapes in the following ways:

- eject and load a selected tape into a drive operating in manual mode.
- format a tape in order to make it accessible for use by Tiger Bridge.
- finalize a tape to allow accessing its contents outside Tiger Bridge.

Load and Eject Tapes

To eject a tape from a drive:

1. Make sure the drive, containing the tape you want to eject, is in manual mode.
2. Select the drive in upper left pane of the Tape Management window and in the lower left pane, click Eject tape.

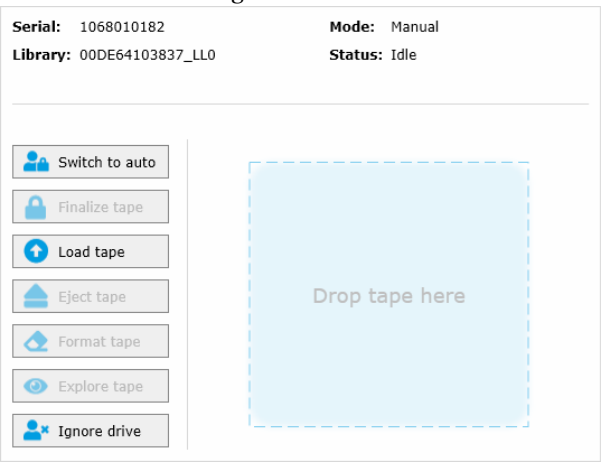


Note: *The button is not active, if the drive is not in manual mode or there is no tape loaded into it.*

To load a tape into a drive:

1. Make sure the drive, containing the tape you want to load, is in manual mode.
2. If needed, eject the currently loaded tape, following the steps above.

3. Do one of the following:



- Select the tape in upper right pane of the Tape Management window and in the lower left pane, click Load tape.
- Select the tape in upper right pane of the Tape Management window and then drag and drop it in the lower left pane.

Note: *The command is not available, if another tape is already loaded into the drive or the drive is not in manual mode.*

Format Tapes

To be able to replicate data on the tapes, Tiger Bridge needs them to be formatted using a proprietary LTFS. That is why even if the tapes in your library are LTFS-formatted, they will be detected as unknown and cannot be used by Tiger Bridge until you format them through Tape Management.

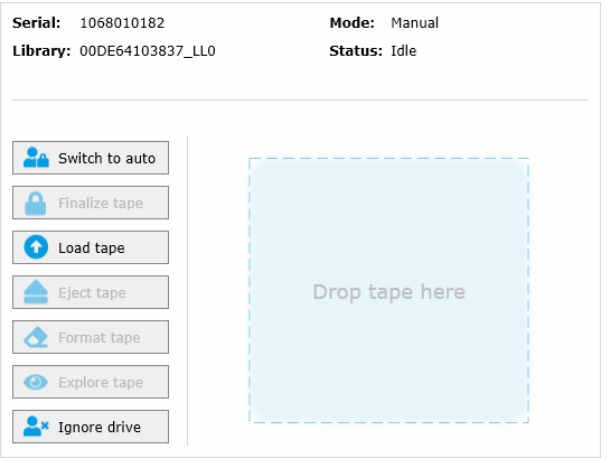
Although Tiger Bridge uses a proprietary LTFS on the tapes, it allows you to access their contents from another application. For the purpose you need to finalize a tape i.e. make its file system readable from any other LTFS-compatible software. Keep in mind that once a tape is finalized, it becomes read-only and no other data can be written on it neither by Tiger Bridge, nor by another application. For more information, refer to “Finalize a Tape” on page 21.

To facilitate your workflow with Tiger Bridge, it is advisable to format all tapes in your library at once. Should you decide to format one tape at a time, when the formatted tape is full and your tape library software loads an unformatted tape into the drive, Tiger Bridge will not be able to replicate any data on it, until you format it.

To format a tape:

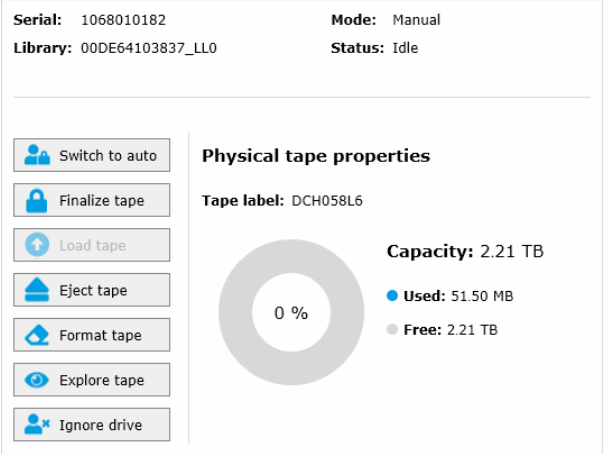
Important: *Formatting a tape in Tape Management erases all its current content, if there is any.*

1. In upper left pane of the Tape Management window, select a drive in manual mode.
2. In the upper right pane, select a tape with unknown status from the same library and in the lower left pane click Load tape.



Note: *The command is not available, if there is a tape already loaded in the selected drive. In this case, first eject the currently loaded tape.*

3. In the lower left pane, click Format tape.



4. When prompted, confirm that you want to continue.

   When the tape is formatted, its status in the upper right pane becomes “Active”. You can eject it from the drive and proceed with formatting another tape, following the steps above.

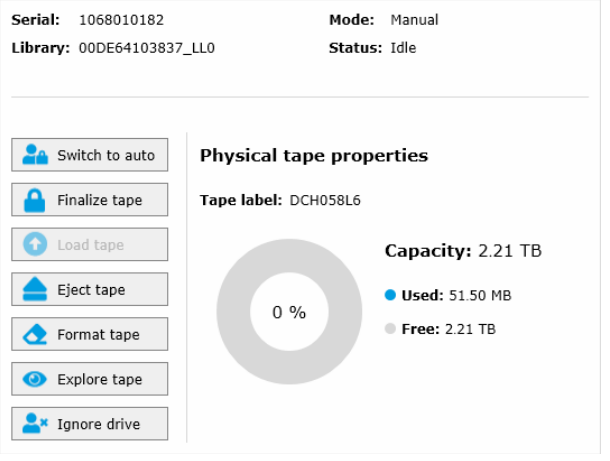
Finalize a Tape

To be able to replicate data on a tape, Tiger Bridge uses a proprietary LTFS on it and no other software can access its contents until you finalize the tape. When you finalize a tape in Tape Management, you remove the additional Tiger Bridge encoding and make the file system readable from any LTFS-compatible software. Once a tape is finalized in Tape Management, it becomes read-only and no other data can be written on it neither through Tiger Bridge, not through any other application. To make the tape writable again, you need to reformat it, which erases all data on it.

To finalize a tape:

Important: *Finalizing a tape makes it read-only and no other data can be written on it until it is reformatted, which erases all data on it.*

1. In upper left pane of the Tape Management window, select a drive in manual mode.
2. If the tape you want to finalize is not loaded in the drive, select it in the upper right pane and in the lower left pane click Load tape.
3. In the lower left pane, click Finalize tape.



4. Confirm that you want to continue.

   When the tape is finalized, it is displayed with “full” status in the Tape Management window.

3 Explore and Manage Data on Tapes

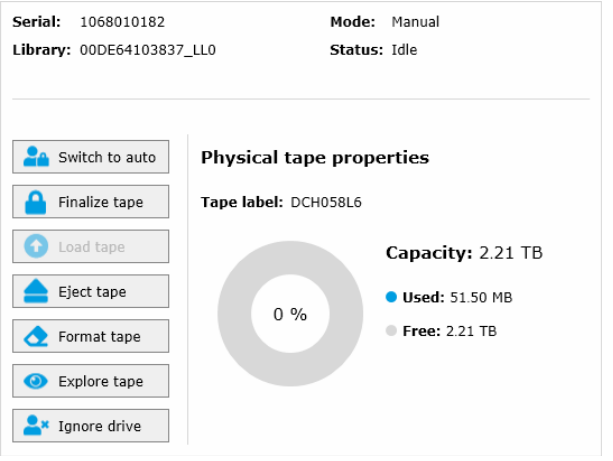
The Drive Browser of the Tape Management application allows you to explore data on the currently loaded tape and manage it in the following ways:

- download data directly from the tape to your computer.
- re-link a stub file (a nearline or offline file) on the source to another version of the file on the tape.

To explore and manage data on the tape, you need to access the Drive Browser, following these steps:

1. In the Tape Management window, make sure a tape with Active status is loaded into the drive.
2. If needed, change the drive mode to manual.

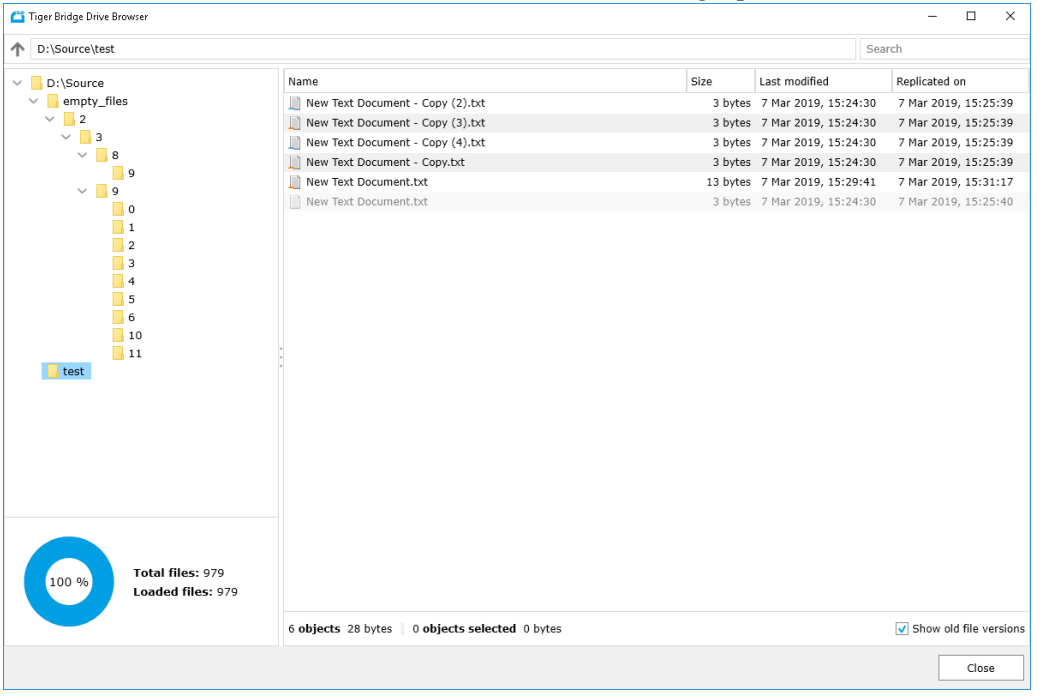
   Important: *Before switching to manual drive mode, make sure the drive status is Idle, designating that no operation is currently going on on the drive.*
3. Select the drive and in the lower left pane, click Explore tape.



Explore Data

Although data stored on tapes is not ordered hierarchically, the Drive Browser displays it with the hierarchical structure it has on the source from which it has been replicated. Thus, if data from more than one source has been replicated on the same tape, the navigation pane tree structure

displays each source as a separate node. Selecting a node in the navigation pane displays its contents (data in the root of the source or its sub-folders) in the right pane.



To facilitate you in discerning the status of data on the tape, the Drive Browser displays files with separate icons::

The file exists on the source and is linked to this file on the tape.

The stub file on the source (nearline or offline) is linked to this file on the tape.

The stub file on the source (nearline or offline) is linked to a file on another tape. Using the Tiger Bridge shell extension, you can view the tape to which the stub file points, by right-clicking the file and selecting Properties.

There is no stub file on the source linked to this file on the tape. To recreate the stub file on the source, you need to synchronize the contents of the source and the target through Tiger Bridge.

Additionally, the Drive Browser allows you to switch the view from showing just the latest version of a file on this particular tape to a view in which all versions of the same file on this tape are displayed. For the purpose, select or clear the “Show old file versions” check box at the bottom right

of the Drive Browser. Regardless of the selected view, the Drive Browser displays a file with a timestamp, which does not match the timestamp of the file on the source, with a greyed icon. Using the Tape Management application, you can re-link a file on the source to another version of the file on the tape. For more information, see “Re-link a File on the Source to Another Version on the Tape” on page 26.

Manage Data in the Drive Browser

Aside from previewing data on the tapes, the Drive Browser also allows you to download any file from the tape locally and to re-link a file on the source to another version of the same file on the tape.

Download Data in the Drive Browser

In contrast to retrieving data from the target through Tiger Bridge, which retrieves the replica the stub files links to, when you download a file in the Drive Browser, you can select which version of the file to download and also can select the location to which the file should be downloaded.

To download a file/folder in the Drive Browser:

1. In the navigation pane of the Drive Browser, select the parent folder, containing the file/folder that you want to download.
2. In the right pane of the Drive Browser, right-click the file/folder and then click “Download” in the context menu.

Re-link a File on the Source to Another Version on the Tape

If a file is modified on the source after it has already been replicated on the target, Tiger Bridge replicates the modified file again. As files cannot be overwritten on the tape, when a file is replicated again, Tiger Bridge creates a new version of the file on the target and removes the link to the older file version. In the Drive Browser the file to which Tiger Bridge currently points is displayed with this icon  , while all other versions are displayed with greyed icons.

Note: *If the tape you are currently exploring in the Drive Browser, does not contain the version of the file, to which the file on the source points, all versions are displayed with greyed icons. Using the shell extension of Tiger Bridge, you can view on which tape is stored the version of the file, to which the stub on the source point.*

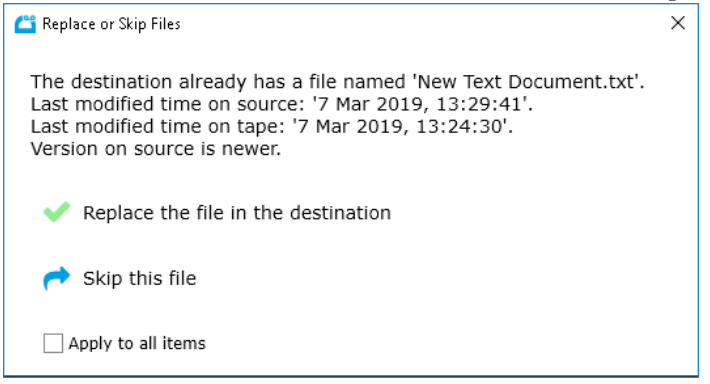
In the Drive Browser you can re-link files one by one or in bulk, by selecting multiple files or choosing to re-link the contents of a whole folder. When you select to perform the operation on multiple files or on a whole folder, the Tape Management application offers you the following options:

- To re-link the file to the stub on the source, only if the file on the tape is newer.
- To re-link the file to the stub on the source regardless of the modification time of the file on the tape.
- To decide what action to take for each separate file.

To re-link a file on the source to another version of the file on the tape:

1. In the navigation pane of the Drive Browser, select the parent folder, containing the file that you want to re-link.
2. In the right pane of the Drive Browser, right-click the file and then click “Create link” in the context menu.

   The Tape Management application displays a dialog, showing you information about the modification time of the file on the source and the file on the tape.



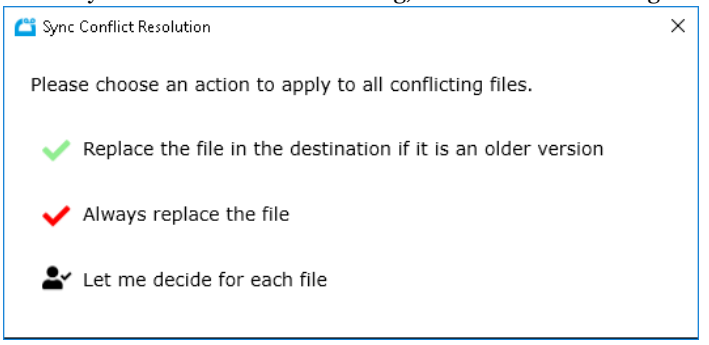
3. Do one of the following:
   - Select “Replace the file in the destination”, to re-link the file on the source to this version of the file on the tape.
   - Select “Skip this file”, to cancel the operation.

To re-link multiple files on the source to other version of the files on the tape:

1. In the navigation pane of the Drive Browser, select the parent folder, containing the file that you want to re-link.
2. In the right pane of the Drive Browser, right-click the folder, whose files you want to re-link and then click “Create link” in the context menu.

   Note: *You can select multiple files/folders, by control-clicking them in the right pane.*

3. In the Sync Conflict Resolution dialog, do one of the following:



- Select “Replace the file in the destination if it is newer”, to re-link the file on the source only if this version of the file on the tape is newer than the one, to which the file on the source currently points.
- Select “Always replace the file”, to re-link the file on the source to the currently selected file on the tape regardless of its modification time.
- Select “Let me decide for each file” and let the Tape Management application show you the re-linking options for each separate file.

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